

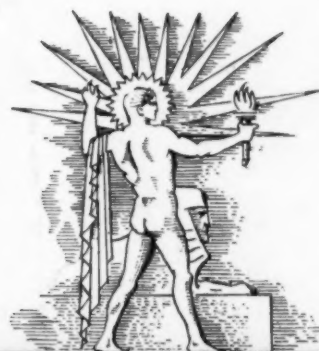
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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



May 2, 1942

Flaps Down

See Page 277

A SCIENCE SERVICE PUBLICATION

Do You Know?

The largest known *crocodile*, 45-feet in length, was discovered in fossil form.

Dragonflies, equipped with exceptionally superior wings, can fly 60 miles per hour.

Iodine should be used only in solution of 2% by laymen, according to the Red Cross.

Giant *sea turtles* lay their eggs by moonlight during June and July on Florida sea beaches.

Emperor Nero made his own *sherberts* by adding fresh fruit juices to snow brought to Rome from the Alps.

Army *food studies* have shown that "vitamin super-charging" of properly nourished men has no beneficial effect on muscular work or recovery from that work.

First used to prevent frost from heaving the road surface, *rock salt* now has been found to stabilize the soil used in the subgrade, improving the road's wearing surface.

The American Medical Association's Council on Foods and Nutrition has advised against indiscriminate dosage of workers with *vitamin* pills; they recommend proper diet.

A 500-pound *bomb* dropped 10,000 feet from a plane flying 200 miles an hour will hit the earth more than a mile ahead of the point under the plane when the bomb was released.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article

BIOLOGY

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CHEMISTRY

From what can levulinic acid be made in industrial quantities? p. 285.

What chemical from whale liver oil can be made into vitamin A by heating? p. 280.

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GENERAL SCIENCE

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What metals keep the stars aglow? p. 275.

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What secrets of America are locked up in Siberia? p. 275.

MEDICINE

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What new sulfa drug is expected to help win the war? p. 281.

PSYCHOLOGY

How is it proposed to use inkblot tests to aid the Army? p. 284.

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What evidence is there that judgments of taste or value have an objective basis rather than individual whim? p. 277.

Why is it important for Army air fighters to enjoy skeet shooting? p. 280.

WILDLIFE

What is the beaver's summer diet? p. 280.

One broken five-pound *flatiron* contains enough iron to make four hand grenades.

Petroleum and natural gas are rapidly replacing coal as a source of *energy* to the United States.

Rubber is not completely waterproof—after constant drenching some water will be absorbed by rubber.

Scientists can help the eye to see in *three dimensions* by using contrasting colors when painting an object.

Unaided by any lens, a Swedish Archbishop four centuries ago drew pictures of *snowflakes* and published a book with 23 woodcuts.

Tomatoes were considered poisonous by the majority of Americans prior to 1835.

About \$4,000,000 worth of *bricks* and metal were salvaged from bombed British houses last year.

Natives of Australia were ruled by their old men; women were rigidly excluded from *political life*.

Women of the Basket Maker Indians of our Southwest wore *bobbed hair*, hacked off with stone blades.

Lacking copal for use in white traffic paint, Britain is trying out 70 miles of road marked with *plastic* white lines, for blackout driving.

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GENERAL SCIENCE

Plant Cancer Experiments Basis For Study in Animals

It Should Now Be Possible To Investigate Fundamental Cellular Changes Which Are Problem's Biological Bases

BECAUSE of experiments showing that cancer spreads in plants much as it does in animals, Dr. Philip R. White of the Rockefeller Institute for Medical Research, Princeton, N. J., told the American Philosophical Society that it should now be possible to investigate more thoroughly the "fundamental cellular changes which are the biological bases of the cancer problem."

Dr. White has demonstrated that cancers of plants, called crown galls, can be transplanted or occur naturally without the aid of the germ that caused the primary growth. What happens in the plant is strikingly parallel to the metastasizing or spreading of an animal or human cancer.

For more than a year tissues from the secondary tumors, which are bacteria free, have been grown by Dr. White outside the plant in vitro. Grafted into either sunflower or artichoke plants, they produce typical crown-gall tumors.

Science News Letter, May 2, 1942

Light Metals Fuel Stars

THE VARIABLE stars, used by astronomers as "yardsticks" of the heavens, in all probability are kept glowing by subatomic transmutations depending upon lithium, beryllium and boron, Drs. Cecilia Payne-Gaposchkin and Sergei Gaposchkin of the Harvard College Observatory, Cambridge, Mass., told the society.

The central temperatures for intrinsic variable stars are found to be too low to be kept fueled by carbon, the way in which it is believed most stars are kept supplied with energy.

Science News Letter, May 2, 1942

Reptiles Once Deaf

THE VERY early forms of reptiles and amphibians were deaf and such perception of sound that they may have had was more tactile than auditory, Dr. Ermine C. Case, professor emeritus of historical geology and paleontology at the University of Michigan, told the scientists.

The ear structure of the geologically younger creatures similar to our snakes and frogs could not respond to air vibrations of ordinary intensity and frequency, Dr. Case has found.

Mammals of today do hear as man hears, the evidence indicates, but the auditory apparatus of fish, amphibians and reptiles is deficient. Birds probably hear in the same way as human beings although their hearing apparatus is less elaborate.

Science News Letter, May 2, 1942

America's First Invasion

SIBERIA holds the secret as to when the first human beings came to America, how they got here and whence they came, Dr. Edgar B. Howard, vice-director of the University of Pennsylvania Museum told the American Philosophical Society.

Science cannot yet give a definite answer to the query: How old is man in America?

Opinion in archaeological and anthropological circles revolves about the estimate of about 10,000 years ago for the advent of man on this continent, Dr. Howard explained, but extreme estimates range from about 2,000 B.C. to 70,000 years or more ago.

"Many secrets, so far as our own country are concerned, are locked up in Siberia," Dr. Howard said. "Until we know more of the glacial geology, anthropology, and archaeology of this region, we cannot hope to answer, with any degree of satisfaction, questions such as that relating to migration routes, the culture stage reached by these early wanderers, and many others which are necessary as a foundation to a real understanding of American prehistory."

The discovery in a cave at Folsom, New Mexico, some fifteen years ago of a number of specialized spearpoints made by primitive Americans, gave much impetus to investigation of the earliest phases of American archaeology. The controversy, however, between those who held to the view that man was a recent arrival in the New World, and those who held the opposite opinion, has continued. (*Turn to next page*).

Science News Letter, May 2, 1942



FINAL ASSEMBLY

In one of America's huge airplane assembly plants located inland "somewhere in the United States," the Curtiss P-40 fighters in the foreground are being put together side by side with the 25-ton Curtiss "Troopships of the Sky" (left background).

Before Crater Lake

HUMAN beings lived in Oregon before a gigantic volcanic explosion blasted a mountain and formed famous Crater Lake, between 5,000 and 10,000 years ago.

Dr. L. S. Cressman, head of the University of Oregon's department of anthropology, reported the discovery in caves of camp fires and camp debris blanketed with pumice from the eruption.

"These eastern Oregon caves show the transition from the atlatl or spear thrower to the bow and arrow," Dr. Cressman said. "Fine twined basketry, the most conspicuous type of article found in the caves, must have been brought in by migratory peoples, for it appears completely developed immediately following a period without basketry. In the eastern caves near the end of occupation were found a few fragments of coiled basketry. Well beneath the pumice in one of the stratified caves were found chipped obsidian tools, bones of horse, camel and several other genera along with the camp fires used to cook the flesh of these animals."

Science News Letter, May 2, 1942

Distance Not Abolished

DESPITE the airplane and its swift flight, it is not correct to say that for modern life "distance has been virtually abolished," Dr. John Q. Stewart, associate professor of astronomical physics at Princeton, told the meeting.

The fallaciousness of this idea was illustrated, Dr. Stewart said, speedily and spectacularly by the fall of unsupported Hong Kong and Singapore, which had been British possessions for a total of 215 years. Although military science stresses the significance of distance when armies are to be maintained far from home, the importance of the distance factor for general social relations is not well recognized.

Prof. Stewart put forth the idea that the influence of a group of people tends to be proportional to their number divided by their distance away.

Social influences weaken with distance much as physical ones, he said, and thus some of the relations of celestial mechanics are brought "down to earth."

Science News Letter, May 2, 1942

In the past, approximately 90% of the paint brushes used were made of black *Chinese hog* bristles.

BIOLOGY

Animals as Well as Plants Use Carbon Dioxide in Cells

New Finding With Revolutionary Effects Possible Through Radioactive Carbon Atoms Fed to Animals

REVOLUTIONARY in its effects on our ideas of life processes, discovery that animals use carbon dioxide in the nourishment of their cells and tissues was laid before the American Chemical Society in Memphis by Dr. E. A. Evans, Jr., of the University of Chicago, recipient of the Eli Lilly award in biological chemistry.

The new finding, which was made possible only through the radioactive "tagging" of carbon atoms in the compounds fed to the animals studied, breaks down the old, simple doctrine on which all students, even in elementary schools, are brought up, that "plants take in carbon dioxide and give off oxygen; animals take in oxygen and give off

carbon dioxide as a waste product."

It is almost as if an engineer had announced the discovery that cinders could be burned in furnaces. The carbon atoms were "tagged" by being made radioactive in the University of Chicago cyclotron. The buildup of carbon dioxide containing these atoms into complex organic compounds was traced in muscle and liver tissues.

Two of Dr. Evans' associates, Dr. L. Slotin and Dr. Birgid Vennesland, collaborated with him in preparing water solutions from dried liver tissue which contain enzymes able to convert the carbon dioxide into the larger organic molecules.

Science News Letter, May 2, 1942

CHEMISTRY

Synthetic Cellobiose Made For First Time by Chemists

Resulting Knowledge of Cellulose Can Be Utilized In Making Explosives, Rayon, Plastics and Wrappings

BASIC understanding of cellulose, the stuff that cotton, wood and a thousand other useful substances are made of, was materially advanced by a paper presented at the meeting of the American Chemical Society in Memphis by Dr. W. T. Haskins, Dr. Raymond M. Hann and Dr. C. S. Hudson of the National Institute of Health.

For the first time in the history of chemistry, the fundamental building block of cellulose, a compound known as cellobiose, was made synthetically by the three researchers. This does not mean that cotton plants, trees and all other sources of cellulose will presently be out of a job, Dr. Hudson stated in discussing the paper. Man will probably never be able to make cellulose as easily and cheaply as plants. But it does mean that science will have a better knowledge of how cellulose is put to-

gether, that knowledge can be turned to advantage in making such things as explosives, rayon, plastics and transparent wrappings, of better quality and at lower cost.

When cellulose was first analyzed, more than a hundred years ago, it broke down into molecules of common glucose. Subsequently it was found that these were united in pairs to make double-sized molecules of a more complex sugar which was named cellobiose. Now for the first time it has been possible to make cellobiose artificially and to demonstrate that in the synthetic molecules the glucoses are tied together in exactly the same way that they are in the natural molecules.

At the same session, what might be termed the engineering properties of the cellulose molecule were discussed by Dr. R. F. Nickerson of the Mellon Insti-

tute of Industrial Research, Pittsburgh. The microscopically fine cellulose fiber of cotton, wood pulp or other natural material is built of long, slender molecules, more or less aggregated into crystals, together with a high content of linked oxygen-hydrogen atoms. Cellulose molecules are not kinked as are wool and rubber molecules, which ac-

counts for the lower degree of stretchiness and bounce to be found in cotton and similar materials. Understanding of these submicroscopic structural details is important in present day efforts to find suitable cotton or other substitutes for hemp, silk, nylon and other "war-short" fibers.

Science News Letter, May 2, 1942

MEDICINE

Early Cancer Diagnosis With Electrical Test 85% Accurate

Cancers of the Stomach Distinguished from Ulcers By Measuring Potential Differences Across Membranes

DISCOVERY of an electrical test that may become the long-sought means of diagnosing stomach cancer in an early, curable stage was revealed for the first time when the National Advisory Cancer Council approved a grant of \$2,400 for further study of the test.

The test has been developed by Dr. Edmund N. Goodman, but the grant was made for continuing work on it under the supervision of Dr. Allen O. Whipple, of Columbia University, be-

cause Dr. Goodman is now in military service.

So far the test has been 85% consistent in distinguishing between cancer and ulcer of the stomach. The earlier the cancer, the more accurate the test. It has been used in only about 150 cases and Cancer Council authorities caution against expecting too much from it at present.

The test is made by measuring electrical potential differences across human

stomach membranes when milk is in the stomach. Dr. Goodman, an American, working with Dr. Gilbert Adair and Dr. John Ryle in the Cambridge University laboratories of Sir Joseph Barcroft, had previously discovered a constant change in electrical potential across human stomach membranes when milk was in the stomach. Further investigations along this line led to the cancer test just reported.

Science News Letter, May 2, 1942

PSYCHOLOGY

Beauty of Music Depends On Notes, Not Just Taste

SCIENTIFIC evidence that what we treasure as beautiful or good is decided by something more than irrational whim or prejudice was cited by Dr. Carroll C. Pratt, of Rutgers University, before the Second American Congress for Aesthetics in Washington, D. C.

Results of experiments reported by Dr. Pratt are opposed to the Nazi doctrine that there is no logic, no objectivity, no fact anywhere in the realm of value, he said.

"Pseudo-philosophers like Rosenberg (Nazi spokesman) insist," said Dr. Pratt, "that the way of life chosen by any people is merely the result of irrational wish and fortuitous circumstance. The only method to defend one's way of life is therefore to fight for it—to pull the trigger first."

The evidence in conflict with such a doctrine was found by Dr. Pratt in the field of music. Such qualities as stateliness, melancholy, wistfulness, gaiety, and agitation, he said, have been found experimentally to be intrinsic properties of the tone patterns themselves, not fanciful projections on the part of the listener. "The listener may supplement the sounds with all sorts of unpredictable associations and emotional fillings, but if he has ears to hear, the basic musical qualities are still there in the sounds themselves, just as pitch and loudness are there."

Great works of music are so complex, Dr. Pratt said, that the ear is forced to listen selectively and what one person hears may not be the same as what another person hears. But when methods were devised to insure that different listeners paid attention to the same thing, disagreement about the beauty dropped almost to the vanishing point.

Science News Letter, May 2, 1942

Cockroaches have been on earth at least 250 million years.



GREAT TRANSPORT

The Douglas C-54 is a commercial plane improved and converted to Army transport use. This four-engine plane will carry 50 armed men, the manufacturer says. On the front cover of this week's *SCIENCE NEWS LETTER* is another Douglas plane, the Navy's *Dauntless*, shown in a dive as it must have looked to many a Japanese.

GENERAL SCIENCE

Science Is Decisive

Present War Is a Battle of Scientific Wits in Which Outcome Depends On Who Can Get There First With Best

By WATSON DAVIS

THIS is a war of science, research, invention, engineering and technology. In all history the military forces have never been so dependent upon the new devices and methods that ingenious men not in uniform have thought up and created.

Science and technology are not only prime factors in fighting the most ruthless and mobile of all wars. They are decisive in the survival of the civilization in which we live.

The fortunes of war today are being determined by brilliant aeronautical advances diverted into planes of war—longer range pursuit planes, speedier dive bombers, heavier bombers—by bountiful technological production for a brave new world betrayed to purposes of destruction; by keen understanding of human motives betrayed into pernicious psychological warfare; our enemies, plotting for a decade or two to take the offensive (which those of goodwill could not bring themselves to believe), stole the tools of technology and converted them into weapons of plunder.

Eventual victory over the Nazis and the Japs is being built in the scientific laboratories and the technical plants of America. The speed of Victory will be determined by the speed and completeness with which those in military and economic authority heed the advice of the technically competent experts.

If technology is not given a commanding voice, disasters will continue and the plague of war may get out of hand.

If keen insight into the pattern of the future and good scientific counsel hold sway, the war will be shortened, long and hard though it may be.

Already in Front-Line Use

Important U. S. A. achievements in science and technology are in front-line use by our war forces.

Airplanes are detected many miles out at sea by new and revolutionary radio devices. These are secret devices of great practical usefulness in obviating surprise attacks by raiding planes.

New explosives of importance have

been devised and put into production for this war.

Vaccines for yellow fever, typhus, and other diseases are in practical or experimental use to protect troops from the disease dangers of war.

Sulfa drugs and other chemicals, perfected and made in American laboratories, are reducing the losses of life and limb due to battle wounds.

There are many other new science developments serving in the war. Secrecy demands that many of them shall not even be mentioned.

Fighting for Two Years

For two years science and technology have been fighting this war actively. As vigorous as any branch of our defense was the plunge into war preparation of the scientists when France fell in May, 1940.

There was an acceleration of the tempo at existing government laboratories, such as the Naval Research Laboratory and other Navy research stations, Wright Field and other Army experimental stations, the laboratories of the National Advisory Committee for Aeronautics, the National Bureau of Standards, etc. As in every war since its creation by Abraham Lincoln, the National Academy of Sciences, and its National Research Council, took on renewed activity.

New organizations within the government were created to enlarge and accelerate the application of science to war. One of these was the National Defense Research Committee which last fall blossomed into the Office of Scientific Research and Development. Another was the National Inventors Council, which was given the job of receiving and evaluating the thousands of ideas and suggestions on winning the war that the public wishes to offer the government. The search for strategic minerals within the United States through the U. S. Bureau of Mines and the U. S. Geological Survey received renewed impetus. Many regular agencies enlisted in the war for the duration.

To advise is about as far as scientists and engineers can go in actually fighting the war with their new weapons. The

military must use tools furnished them. The scientists can advise with some vigor and emphasis. But secrecy is necessary to keep the enemy from knowing what is being cooked up in the laboratories and readied on the invasion barges and in the bellies of the bombers. And secrecy can hide inaction as well as surprising, aggressive preparation. As with production and military action, the great problem is getting there first with the most and newest. If the enemy pulls a new one out of the laboratory, we must counter promptly and if possible raise him one. Or raise him before he has a chance to deal it out.

Classic example of applying the antidote in this war was the neutralizing of the magnetic mines of the Germans by the degaussing belts for ships developed by the British.

"The U. S. is now paying a crushing price for the belated technical education of its bankers and public servants."

This is the judgment of an article in *Fortune*, which says that the ultimate decision for action or nonaction upon essentially technological matters has rested in the hands of men "who were without the capacity or the spirit to make the correct technical decisions."

These are some of the technological blunders cited: A belated heavy, long-range bomber program, exasperatingly sluggish progress in getting adequate fire power and high-altitude performance into fighter planes, continuing failure to provide any emergency types of long-range fighter planes, failure to create sufficient stockpiles of strategic raw materials, except manganese, failure to convert industries to war production, failure to expand adequately aluminum and magnesium production, failure to produce enough strategic metals from low-grade domestic ores. And not least, the synthetic rubber plants that were not begun early enough.

Industry Expanding Vastly

Industry is expanding vastly under the war impetus. Science and engineering must direct most of this vast increase. For instance, the manufacturing chemical industry will practically double in structure and value during the present year, Dr. Walter S. Landis of the American Cyanamid Company estimates. Industry's expansion concerns basic stuffs, steel, explosives, synthetic plastics, and

thousands of other things. Science and research provide substitutes, and when substitutes become scarce, substitutes for substitutes. Silver goes to work for a change. Other things do the work of shellac, tung oil and other products of Asia and the East. And there are many useful and necessary gadgets: Air sirens, blackout lamps, fences that hear and electronic robots that replace watchmen.

Manpower Critical Problem

Manpower for the scientific war is one of the critical problems. Already most of the physicists and radio engineers are in the service of research, more than 3,500 for NDRC alone. For the Navy 25,000 women with radio experience are being sought. Radio amateurs to the total of 15,000 are in the armed services. Physicians are being assigned to posts in the uniform and to serve industry and civilians. Industry is searching for technically trained men. Every college graduate in science and engineering has several jobs waiting for him. Because this is to be a long war there is a growing realization that the boys and girls now in high school, particularly those with scientific promise, must be sought out and given opportunity to do the job they are best fitted for. Intensive short courses in engineering are training thousands of them for immediate jobs in industry, while others will find opportunity in accelerated courses in technical schools.

Science Talent Search

Thousands of high school boys and girls of potential scientific ability will be brought to attention by a science talent search being conducted by Science Service as one of the activities of Science Clubs of America. Twenty Westinghouse science scholarships will be awarded.

Under present conditions youth must come into active service earlier than has been customary in the past. If the war lasts five years longer, the boys and girls now 13 will be needed for fighting or production. In scientific research youth is no handicap, it may even be an advantage, once the basic foundations of past progress are known. Remember that Perkin was in school and 18 when he discovered mauve, that Hall was 26 when he produced aluminum, that Newton was 19 when he worked out the principles of gravitation.

We must begin an intensive search for genius, or at least talent in science. Those who have been endowed by nature and their ancestors and by their training and environment with a flair for science and

research must be allowed to use that ability to the best interests of our war effort and our civilization. We must see to it that the unusual boy or girl gets an opportunity to go to college or technical school and is channeled into a definite specialized responsibility in our growing national machine for fighting and producing. We must see to it that the exceptional boy or girl is given the basic education that will allow him to become a leader in the important reconstruction after the war.

More than 50,000 inventive suggestions have been offered by the American public as an aid to winning the war. Some of these ideas are in actual use by the armed forces. There is still opportunity to help in this way. Suggestions should be addressed to the National Inventors Council, Department of Commerce, Washington, D. C. Lawrence Langner, secretary of the NIC, has suggested that anyone intending to invent should ask himself this question: "What would I do if I were the Commander in Chief of the Army and Navy and could use any invention which I could devise?"

Science News Letter, May 2, 1942

PHYSIOLOGY

Unknown Mechanism That Starts Blood Flow Found

FOR the first time, the mechanism that starts the blood circulating through the lungs at birth has been discovered. The finding, by Dr. J. Allen Kennedy and Dr. Sam L. Clark, of Vanderbilt University School of Medicine, was announced at the meeting in St. Paul, Minn., of the newly organized American Federation for Clinical Research.

Prevention of the incurable form of congenital heart disease whose victims are known as "blue babies" may follow.

The newly-discovered mechanism is a muscular contraction which closes the ductus arteriosus. This is a channel between the pulmonary artery and the aorta which before birth shunts the blood so that it bypasses the lungs. Normally it closes at birth. If it did not we should all have congenital heart disease, with blue skins because our blood did not get enough oxygen.

There have been many theories of how the ductus closed, Dr. Kennedy pointed out, but none were founded on scientific fact. He and Dr. Clark found that the ductus is different in structure and



FITTING MEN TO WORK

For such "tight spot" jobs as this one of bucking up the rivets inside a wing, several aircraft manufacturers are using mid-gets. This man is only four feet tall and weighs 88 pounds.

reactions from other large arteries.

"We have observed that it closes by a muscular contraction and that in response to certain definite stimuli it will close," he reported. "At birth it normally closes within a few minutes and remains closed."

"The best method of causing closure of the ductus is inflation of the lungs with air or oxygen, either by normal breathing or by an artificial inflation method. Both are effective. Oxygen is apparently a necessary component of the gas mixture. Certain other stimuli will also cause prompt closure of the ductus."

"As an outgrowth of this work we have developed a new conception of the cause of patency (failure to close) of the ductus arteriosus. Instead of being caused by a developmental anomaly or true malformation, which has always been the accepted cause, we believe it is due to the failure of a normal physiological mechanism which should occur at birth, probably closely related to normal breathing and normal oxygenation of the blood after breathing has begun."

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PSYCHOLOGY

Skeet Shooting Aids Aim Of Army Air Fighters

TRYING to hit a clay pigeon is so much like trying to hit an enemy plane that Army air fighters are being given intensive training at the semi-circular firing line of the skeet field, the War Department has disclosed.

The ability to gage the distance a gun must be aimed ahead of and over a moving target is needed by both pilots who fire stationary guns and non-pilots who fire turret guns.

Army air force training officers point out that skeet shooting gives most students their initial contact with the art of swinging and following through on a target.

Many of the nation's crack skeet marksmen, including several champions, are now assisting with this program, the War Department said.

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AERONAUTICS—EDUCATION

New York Public Schools Plan Aviation Courses

PUBLIC schools in New York State will be ready next September with elective courses in aviation beginning with the first grade and continuing through senior high school.

Pupils in grades 1-3 will draw pictures of planes, visit airports, collect aviation pictures and read about aviation, while senior high students will undertake the construction and flight of gliders. Between these two phases, every aspect of aviation consistent with the age and ability of the pupils will be taught. The courses were designed by Roy G. Fales, state supervisor of industrial arts training, and Dr. L. A. Wilson, state deputy commissioner of education.

Purpose of the courses is to build a generation even more interested in and familiar with aviation than the present generation is with the now fading automobile.

Mr. Fales reports that model aircraft building had aroused so much interest in aviation among youngsters that even parents and teachers were asking for information.

He noted, however, that a long-range program for students beneath the college level will require full cooperation of the Army, Navy, Civil Aeronautics Administration and parents and teachers.

Mr. Fales said instructors in industrial

arts can learn the needed skills for aviation instruction in a one-week intensive course. He advocated that such courses should be immediately developed by local industrial arts teachers' clubs if their membership includes a teacher who is prepared.

Plane building can be done on any bench or light table, and as a rule students may be expected to purchase model kits. He said expenses to individual schools can usually be held to a small figure for the cost of housing facilities.

(Robert H. Hinckley, Assistant Secretary of Commerce for Air, recently supported introduction of aviation courses in elementary and secondary schools throughout the country by September.)

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WILDLIFE

Beaver's Summer Food Mainly Grass, Not Bark

BEAVERS, we were all taught in our first nature-study lessons, feed on the bark of trees which they cleverly fell with their chisel-like teeth. That's true enough for their winter food habits, but it now develops that they become grazing animals to a very large extent during the summer.

Their preference for grass in summer has not been noted before, apparently because nobody bothered to watch beaver very closely in summer, David B. Cook, of the New York State Conservation Department, told the meeting of the American Society of Mammalogists in New York. He watched a colony of beaver in eastern New York for eight seasons, and found that they preferred to get their meals in the thick sward of grass that grows around the margins of their muddy ponds.

They did not entirely abandon their wintertime diet of tree food, however. Next to grass, they liked to nibble aspen and other hardwoods. They also fed to some extent on roots and tubers dredged from pond bottoms, with a light garnish of seed-heads and flowers.

A crop of food—potatoes, wheat, rice—for human beings can be grown every year. It takes much longer for a crop of beaver food to grow. Prof. Albert R. Shadle and Edward Gese of the University of Buffalo reported on studies on aspen reforestation in Allegany State Park, which indicate that 20 to 25 years is required for replacement of these food trees once beaver have cleaned them out of a given area.

Science News Letter, May 2, 1942

IN SCIENCE

CHEMISTRY

Vitamin A Supply Doubled By Find of New Chemical

DISCOVERY of a new parent chemical for vitamin A which will double the amount of the vitamin that can be obtained from whale and probably other fish liver oils was announced by Dr. Norris D. Embree and Edgar M. Shantz of the laboratories of Distillation Products, Inc., at the meeting of the American Chemical Society in Memphis.

Whale liver oil, the chemists discovered, contains a chemical, named kitol, which can be turned into vitamin A in the laboratory by simply heating the oil to 500 degrees Fahrenheit. The kitol of whale liver oil has hitherto been discarded as an impurity when vitamin A was extracted from the oil. Its ability to become vitamin A was not suspected because animals cannot convert kitol into vitamin A as they convert the green and yellow coloring matter of plants into the vitamin. Scientists, on the other hand, have never been able to convert carotene or the other vitamin A parent chemicals into the vitamin in the laboratory.

Kitol occurs most plentifully in whale liver oil but is also found in most other liver oils.

Science News Letter, May 2, 1942

ENGINEERING

Tin and Electric Power Saved By New Process

HALF the tin that goes into a tin can, as well as electric power and labor, are saved by a new electro-plating process announced by E. I. du Pont de Nemours and Company.

The new process employs a neutral instead of an alkaline solution, and is said to eliminate sludge and the consequent waste of tin. It also plates twice as fast and with less electric power. It is being tried at several tinning plants.

The electro-plating process gives a thinner and more uniform coat of tin than the method of running a strip of steel through a bath of molten tin. The savings in tin are from 40% to 65%.

Science News Letter, May 2, 1942

THE FIELDS

PHYSIOLOGY

Vitamin A Discovered in Fish by Invisible Light

MUCH-NEEDED vitamin A, the good-eyesight factor, can be traced in fish tissue by means of ultraviolet light, the annual report of the Canadian Fisheries Research Board reveals.

Because vitamin A is fluorescent it picks up the invisible ultraviolet light and translates the rays into visible light. The problem of discovering which of various tissues is richest in A, and its extraction and concentration, is greatly aided by this technique, the report states.

Both Canada and the United States are anxious to discover and extract every possible unit of this vitamin needed for good vision at night and for general health and resistance to infections. The United States exports about ten trillion units annually to Great Britain under lend-lease terms.

Science News Letter, May 2, 1942

MEDICINE

New Sulfa Drug Announced; Expected to Help Win War

THE preparation of a new sulfa drug that is expected to do its share toward winning the war was announced by Dr. P. S. Winnek and associates, at the meeting of the American Chemical Society in Memphis.

One of the most troublesome diseases any cantonment has to deal with is bacillary dysentery—so common a nuisance that it is sometimes called “camp dysentery.” It may lay up most of the soldiers in a camp for several weeks, seriously interfering with training.

Standard treatment for this malady now is sulfaguanidine. This sulfa drug, reported to be relatively unabsorbable, stays in the intestine and kills the germs there.

Dr. Winnek and his associates of the American Cyanamid Company have made the molecules of this sulfa drug larger by tucking in another group of carbon, hydrogen, oxygen and nitrogen atoms, so that the new compound ap-

pears under the longer name sulfanilaminoguanidine. This is reported to be as unabsorbable as its relative now in use, and even more effective. Further tests are contemplated, however, before its large-scale clinical use in army camps and civilian life is undertaken.

Science News Letter, May 2, 1942

PSYCHOLOGY

Rats Do Not Learn Better With Extra Brain Cells

SCIENTISTS can increase the number of brain cells in baby rats, but the artificially produced cells do not help the animals later to learn to run through a maze, it is reported by Drs. C. J. Warden and Sherman Ross of the Animal Laboratory of Columbia University's Psychology Department and Dr. Stephen Zamenhof of New York City. Their work is described in *Science* (April 17).

The additional brain cells were produced by injecting the mothers with pituitary growth hormone before the baby animals were born. The resulting increase in number of brain cells in the young was 38.4% for the males and 40.6% for the females.

It may still be possible, despite lack of better performance on the maze problems, that this artificial increase of brain cells can lead to higher intelligence. Learning to run a maze, after all, does not require a very high level of intelligence. Perhaps in a task of greater complexity, the super-brained animals might display an advantage.

No indication was given by the scientists that the brain-power of humans can be increased in this way.

Science News Letter, May 2, 1942

ICHTHYOLOGY

Drought Killed Fish In Great Plains Region

THE terrible five-year drought of 1934-39 is only a bitter memory in the Great Plains region now, but its deadly effects have persisted. During the past half-century, 19% of the fish species once known from Nebraska have become extinct in that state, and the great drought is presumably responsible for a major share of the mischief, Dr. Raymond E. Johnson of the University of Michigan Museums stated before a meeting of the American Society of Ichthyologists and Herpetologists.

Science News Letter, May 2, 1942

MEDICINE

Hospitals Need Women For Technical Positions

HOSPITALS other than Federal Government institutions need immediately 20,000 professional and technically trained persons to fill current vacancies and have under way additions to present facilities that will require 20,000 more.

Most, if not all these positions could be filled by women, Dr. G. St. John Perrott, of the National Institute of Health, told the Conference on War Demands for Trained Personnel.

Of the 40,000 persons needed, about 36,000 are trained nurses or other persons giving nursing care. Others needed are: dietitians, technicians, medical social workers, medical record librarians and dental hygienists.

If the armed forces later find it necessary to call civilian hospital employees to fill military needs, the demand for trained women will be stepped up accordingly, he indicated.

Public health departments need 3,600 women at the present time. There are also openings for about 2,700 men and in some cases these men could be replaced by women.

Science News Letter, May 2, 1942

WILDLIFE

Marshes Help Indians Make a Better Living

MANAGEMENT of Canada's vast marshlands for the production of fur, especially muskrat and beaver, was pointed out as a genuine social-improvement program also, by D. J. Allan of the Canadian Department of Mines and Resources. Beneficiaries are the Indians of the regions, who are enabled to make a better living at an occupation which they understand.

“The Indian,” Mr. Allan stated, “sees how he can become a good Indian, capable of taking his place as a good and honored member of our Canadian family instead of a third rate imitation of a white man forced to compete in fields traditionally repugnant to his nature.”

“There is room in this field, if it is wisely developed and skillfully exploited, to provide a living, and a good living, according to his standards, for every one of our 120,000 Indians . . . And it can be done, and I hope it will be done, within the next ten short years.”

Science News Letter, May 2, 1942

ASTRONOMY

Chance To See Mercury

Seldom-Viewed Smallest Planet Will Set an Hour and A Half After Sunset for a Few Evenings Near May 18

By JAMES STOKLEY

ALTHOUGH the spectacular display of bright planets during the past winter is just about at its end, we have in this month of May the best opportunity of seeing the least familiar of the five that ever are visible without a telescope.

Mercury, the innermost of the planets, never wanders very far away from the sun, and mostly it is so nearly in line with that daytime star that it is completely lost in its glare. Only when it is farthest to the east of the sun, a position called its "greatest eastern elongation," does it remain in view long enough after the sun has set to be visible in the twilight. Every 116 days it reaches such a greatest eastern elongation, but not every one is favorable for bringing the planet into view.

This month's elongation, however, happens to be a rather good one. It comes on May 18, and for a few evenings around this date Mercury will set about an hour and a half after sunset. Thus, it will go down before the sky is quite dark, but the planet, nearly as bright as the first magnitude star Procyon, in Canis Minor, the little dog, should be easy to locate as a reddish object low in the northwest.

Since Mercury sets so early, it is not shown on the accompanying maps, as they depict the sky for about 11:00 o'clock, war time, at the beginning of the month, an hour earlier at the middle, and two hours earlier at the end of May. However, two other planets are indicated. Brightest is Jupiter, in the constellation of Taurus; while still higher, in Gemini, the twins, is Mars. Because of its great distance from us at present, Mars is no brighter than a star of the second magnitude.

As for the other two naked eye planets, Saturn is now lost in the sun's glare.

On May 23 it will be directly beyond the sun. Venus is a bright "morning star," and shines brilliantly in the east before sunrise.

With Sirius, the dog star, gone from view, Vega, in Lyra, the lyre, is the brightest star seen in the evening. It can

be found in the northeast. Below it is Cygnus, the swan, with first magnitude Deneb. In the northwest, not far from Jupiter, is Capella, in Auriga, the charioteer, while nearby in Gemini, the constellation in which Mars is sojourning, Pollux, of the first magnitude, and Castor, of the second, are visible. Canis Minor, already mentioned, is to the west, just left of Gemini, and contains Procyon.

High in the north, in an inverted position, is the Great Dipper, part of Ursa Major, the great bear. The two stars called the "pointers" are so marked—a line drawn through them shows the position of Polaris, the pole star. And a line continuing the curve of the dipper's handle, around to the south, will bring you to Arcturus, in Bootes, the bear driver and, still farther, to Spica, in the virgin, Virgo.

Adjoining Virgo, to the right, is Leo, the lion. The front part of the animal, toward the west, makes up the "sickle," which has the star Regulus at the end of the handle at the bottom. And low in the southeast there is just appearing the first part of a constellation that so conspicuously marks the evening sky of summer—Scorpius, the scorpion. The bright red star Antares is just above the horizon, as seen on the maps.

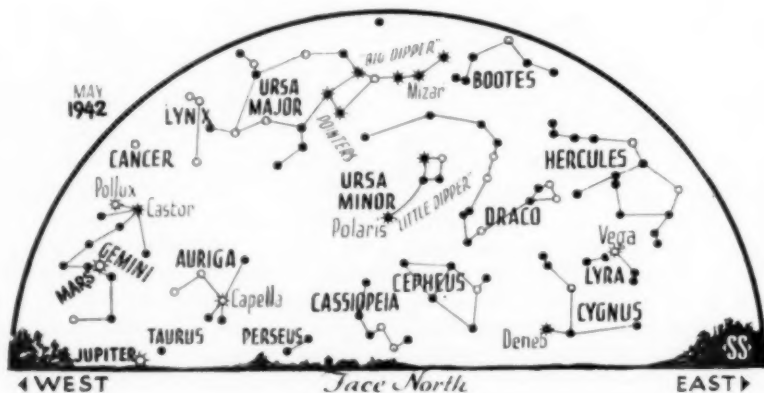
In models of the solar system, usually called "orreries," after the 18th Century Earl of Orrery, an Irish nobleman for whom a very famous one was built, it is usual to represent the planets as moving in circles about the sun, and all in the same plane. This greatly simplifies

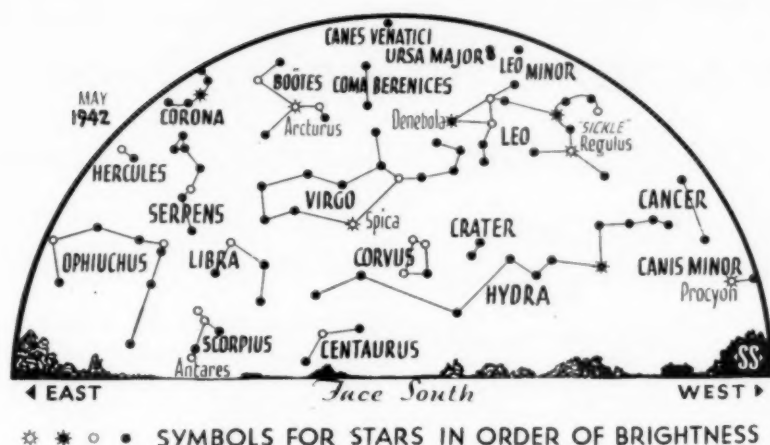
the construction, though some have been built, notably the famous one that David Rittenhouse made for the University of Pennsylvania in colonial days, in which the paths are much more accurate. Actually, the planets move in ellipses, though most of them are nearly circular, and in planes that are inclined to that in which the earth travels. Of the naked eye planets, the orbit of Mercury is inclined the most, 7 degrees, and is also the most elliptical. On the average 36,000,000 miles from the sun, Mercury can approach that orb to within 28,550,000 miles, and it can recede as far as 43,350,000 miles. In contrast, the range of distance of the earth from the sun is only from about 91,500,000 to 94,500,000 miles.

This is responsible for a great variation in the distance of Mercury from the sun at the time of elongation. If it occurs when Mercury is nearest to it, then the greatest elongation is only 18 degrees, as measured against the sky; but if it comes when the planet is farthest from the sun, it can get as far as 28 degrees away. The elongation this month is about average, 22 degrees 11 minutes.

However, there is another factor determining the visibility of Mercury. In the United States, or any place not in the tropics, this 18 to 28 degree figure is never measured in a vertical direction, but always to the side. However, when, for the northern hemisphere, greatest eastern elongation comes at this time of year, the line from the sun to Mercury is most nearly vertical, and then it is highest in the sky at sunset.

There is still another factor in the distance the planet is north or south of the sun's path, a line called the ecliptic.





It happens that on May 18, Mercury is about 5 degrees, out of a possible 7, north of the ecliptic and this brings the line from sun to planet still more nearly vertical, with the result that this month Mercury will set as much as an hour and a half after sunset.

Because of its proximity to the sun, Mercury is very difficult to observe, and no very distinct markings have been seen. However, the planet is so small, about 3100 miles diameter, that it does not have an atmosphere; it is not massive enough to hold one even if we could now endow it with such a layer of air. And just as the moon always keeps the same face toward the earth, so does Mercury always present the same hemisphere to the sun. This was demonstrated several years ago at the Mt. Wilson Observatory when very delicate measurements, with a device called a thermocouple, were made of the planet's surface temperature. No heat whatever could be detected from the dark side, which is close to the absolute zero of minus 460 degrees Fahrenheit, even though the side toward the sun is about 660 degrees Fahrenheit, hot enough to melt lead. Even if Mercury turned at such a speed that many weeks were required from sunset to sunrise, the dark side would hold a little heat, which could be detected.

The reason why Mercury should rotate so slowly as always to keep the same face to the sun is the same as that for the similar behavior of the moon to the earth. When Mercury was younger, and the globe was still in a plastic condition, tides were caused by the sun's pull. These acted as brakes, and gradually slowed its turning, but finally, when the present condition was reached, this braking action ceased. The same thing happened with the moon, due to tides caused by the earth's pull. The effect is

still going on with the earth. Tides here, largely caused by the moon's attraction, are gradually slowing down our rotation, and the time will come, in the very distant future, when one hemisphere of the earth is always turned to the moon. As this will be some 25,000,000,000 years from now, we hardly need worry about it!

Celestial Time Table for May

Saturday, May 2, 3:00 a.m., Moon nearest, distance 223,700 miles. Monday, May 4, early a.m., Meteors of eta Aquarid shower. Thursday, May 7, 8:13 a.m., Moon in last quarter. Monday, May 11, 2:50 a.m., Moon passes Venus. Friday, May 15, 1:45 a.m., New moon. Sunday, May 17, 12:18 a.m., Moon passes Mercury; 11:00 a.m., Moon farthest distance 252,500 miles; 3:50 p.m., Moon passes Jupiter. Monday, May 18, 4:00 p.m., Mercury farthest east of sun. Tuesday, May 19, 8:49 a.m., Moon passes Mars. Saturday, May 23, 5:11 a.m., Moon in first quarter. Saturday, May 30, 1:29 a.m., Full moon; noon, Moon nearest, distance 222,000 miles.

Science News Letter, May 2, 1942

ARCHAEOLOGY

Life Was Long Clambake For Tennessee Indians

VANISHED traces of a vanished people are described and pictured in a new publication of the Smithsonian Institution, by William S. Webb and David L. DeJarnette of the Tennessee Valley Authority staff (Reviewed, *SNL*, this issue).

The vanished people were Indians who lived on the banks of the Tennessee so long ago that their only record consisted of vast heaps of river-mussel shells, remnants of their feasts. Even these have vanished now, flooded by the waters backed up in the 75-square-mile artificial lake behind Pickwick dam.

When it became evident that the new lake was going to flood the shell-mound

areas, TVA archaeologists went to work on the mounds, using WPA labor and taking advantage of the facilities of the WPA Archaeological Laboratory at Birmingham and the Alabama Museum of Natural History.

Life for these vanished Indians appears to have been one long clambake. The shellfish of the river, together with fresh-water snails, seem to have constituted their staff of life. They lived right on the mounds their own feasts had created, and even buried their dead in them.

It is inferred that they were a very early people because no evidence has been found that they used bows and arrows, and in their more primitive stages at least they had no pottery. In these traits they tie in with the Basket-maker people of the Southwest, whom they also resembled in using the spear-thrower, or atlatl, as their principle projectile weapon.

Lowest in the mounds, and therefore earliest in time, were fireplaces indicating that they cooked their mussels by simply baking them on hot rocks. Higher up were crudely hollowed-out vessels of sandstone and soapstone, in which food might be boiled. Finally pottery vessels and other objects appear. There is no evidence at any stage of agriculture, though there is some indication of the use of storage bins, in which they may have kept collections of nuts, seeds, roots and other wild vegetable foods.

Primitive as they were, these Indians had the same domestic animal that has been found with all other North American tribes, the dog. The dog appears to have been of some special significance in their religion, for dog skeletons have been found showing signs of elaborate ceremonial burial.

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Diamonds are believed to have been first discovered in Brazilian gold washings in 1670.

Earliest zoo of which there is record was founded in China about 1100 B.C. by the First Emperor of the Chou Dynasty; it was called the Park of Intelligencé.

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PSYCHOLOGY

Sciences Will Merge in Study of Post-War Problems

Specialists With Training, Viewpoint and Imagination Broad Enough To Attack Inter-Science Problems Needed

AMERICA'S all-out war is using the services of specialists intensively, but the problems of the post-war peace will be solved by those with a training, viewpoint and imagination broad enough to attack inter-science problems, Prof. Gardner Murphy, of the College of the City of New York, said in his address as President of the Eastern Psychological Association.

"We proved incapable of rebuilding twenty years ago," Prof. Murphy said. "If we wish our children and our children's children to fight ever more destructive wars in a mounting spiral of revenge and counter-revenge, we have but to retreat into our scientific shells and await the process."

All the biological and social sciences, he said, will have to be mobilized swiftly and surely to meet the problems of the returning soldier who may be seared or hardened, war-shocked or confused, and who may never have met civilian problems in all his adult life.

And men of broad knowledge and interest will be needed, he predicted, to help the fanatical people of the Axis nations and the humiliated embittered folk of the nations now dominated by the Nazis to adapt themselves to a strange new world of freedom.

Science News Letter, May 2, 1942

Balloons Test Character

LITTLE future Hitlers in the nursery may be detected by watching what they do when given a pretty colored balloon.

The small boy who crushes his sphere with violent eagerness has strong aggressive tendencies, Dr. L. Joseph Stone, of Vassar College, reported.

But the child who refuses over-intensely to break it also shows aggressiveness, he said.

Whether the child introduces the idea of breaking the balloon himself—eager to hear it pop, whether he follows an adult's invitation to do so, whether he is willing to have the adult do his smashing for him, or whether he refuses outright to have any balloons broken, he reveals to psychologists what his aggressive tendencies are and his control over them in other situations.

Science News Letter, May 2, 1942

Test For Blindness

POSSIBILITY that by electrical stimulation of the eye, it may be possible to distinguish between blindness due to disease of the retina and blindness caused by disease of the optic nerve was suggested by Dr. H. D. Bouman, of the University of Rochester.

When a very faint, barely perceptible electric current is applied to the normal eye, an effect is noted when the intensity of the electric stimulation changes. This is due to action of the nerve fiber.

Three patients with almost total blindness were examined by Dr. Bouman by the electric stimulation method. One of them showed complete loss of electric excitability in the blind eye; this patient

suffered from one-sided neuritis of the optic nerve. The other two showed excitability, but the response was like that of dark-adapted eyes even though the patients were examined in broad daylight. These cases had diseases of the retina, not of the optic nerve.

Science News Letter, May 2, 1942

Inkblots for Tank Corps?

MEN suitable for the tank and other mechanized units of the armed forces and who can stand up under the strains of modern warfare, can be selected by use of an inkblot test ordinarily used to measure creative imagination or personality, Dr. Z. Piotrowski and Miss B. Candee of the National Youth Administration suggested.

The test consists of looking at a carefully selected series of black and colored inkblots and telling what sort of picture or object the rather fantastic shape makes you think of. Your answers give psychologists clues to your personality.

It was possible, Dr. Piotrowski and Miss Candee reported, to pick the young men who would make good at the sort of mechanical tasks necessary in the mechanized forces, and also to spot the ones who would break down under the strains of military life.

In a test group of 70 men, predictions were made successfully for 64 individuals, they said.

Here are the personality traits it takes to make good in modern mechanized warfare, as analyzed in the course of this experiment: 1. Ability to carry through a given job carefully and conscientiously without continual prodding. 2. A constitution that is not disorganized by psychic shock but which can absorb or firmly reject such experience. 3. Enough strength of character at a chaotic period of adolescence to keep certain impulses from coming out in action without repressing them from consciousness. He can want to give the foreman a punch without doing it, but still be aware that he wants to.

Ability of the inkblot test to reveal the young man who would break down in a situation of unusual military strain although he might get along all right in ordinary camp life was indicated by six cases, five of which were judged correctly through the test alone.

Foremen's ratings on these young men were unusually favorable for a long time, yet they blew up emotionally when they were faced with unusual strain, lost their jobs, were fired, or left home to drift.

Science News Letter, May 2, 1942

The Foundations of Conservation Education

Edited by Henry B. Ward, Emeritus
Professor of Zoology, Univ. of Illinois.
Published by The National
Wildlife Federation

A symposium participated in by several of the most active researchers and thinkers in the field of conservation: Wesley C. Mitchell, W. C. Lowdermilk, Paul B. Sears, Arthur N. Pack, W. W. Horner and Richard Horner.

Dr. Henry B. Ward's section on "Biology as the Foundation of Conservation Education" is of particular importance to teachers because it stresses certain weaknesses in the teaching of biology and proposes remedies that would strengthen the program of conservation education.

242 pages. \$1.00 cloth, 60c paper. Order from Retail Book Department, Science News Letter, 1719 N St., N. W., Washington, D. C.

CHEMISTRY

Levulinic Acid Prepared Easily From Cornstarch

Long Known Only as Laboratory Curiosity Because of Difficulty of Preparation, Can Now Be Made Cheaply

ANOTHER acid that has long been known only as a laboratory curiosity because of its difficulty of preparation and consequently high cost, can now be made available very cheaply in industrial quantities. It is levulinic acid, a highly reactive organic compound. The process by which it may be made commercially available was disclosed to the American Chemical Society by Dr. Wendell W. Moyer of the A. E. Staley Manufacturing Company of Decatur, Ill.

The acid is prepared from any sufficiently abundant carbohydrate; cornstarch is an almost ideal starting substance. It is converted first into glucose, and the latter, through a process of several steps involving treatment with a mineral acid, into levulinic acid.

Because of its lively properties, Dr. Moyer foresees a good future for the acid in industry, and especially in medicine, where calcium levulinate has already become an important pharmaceutical chemical.

Dr. Moyer discussed other medicinal and related possibilities of levulinic acid: "The most significant uses of levulinic acid depend upon the unique properties of the free acid. It is nontoxic to animals but retards the growth of bacteria and fungi. Applications in the food-processing fields are indicated. Perhaps the most interesting and valuable discovery is that levulinic acid is a powerful plant growth stimulant. Extensive tests now being made indicate that the acid may be a factor for increasing the yield of agricultural crops."

Science News Letter, May 2, 1942

May Replace Tapioca

WAXY maize starch, product of a peculiar-looking kind of corn that seems to be waxy though it contains no actual wax, promises to become a strong competitor for tapioca. Not that a new kind of blanc-mange will replace tapioca pudding; desserts are the least of tapioca's business, anyway. The real competition will come in industry, for

tapioca starch is one of the great industrial starches; for one thing, it furnishes practically all the "stickum" on envelope flaps and the backs of postage stamps.

Possibility of waxy maize starch from home-grown corn replacing imported tapioca was suggested by Prof. R. M. Hixon and Dr. G. F. Sprague of the Iowa Agricultural Experiment Station at Ames. It is a business worth trying for. According to Drs. Hixon and Sprague, the United States has imported annually for the last three years about 350 million pounds of duty-free starch, mostly tapioca. This is about one-fourth of the nation's starch supply.

Science News Letter, May 2, 1942

● RADIO

Saturday, May 9, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science, over Columbia Broadcasting System.

Results of the Eighth Pan American Child Congress will be discussed by one of the participants.

Tuesday, May 5, 7:30 p.m., EWT

Science Clubs of America programs over WRUL, Boston, on 6.04, 9.70 and 11.73 megacycles.

One in a series of regular periods over this short wave station to serve science clubs, particularly in the high schools, throughout the Americas. Have your science group listen in at this time.

Phosgene and mustard gas were the two most widely used during the last war.

No matter how differently they affect the ear, all sound waves travel at the same speed.

Industrial eye accidents during 1941 robbed America of 9,500,000 man-days, enough working time to have built 17 destroyers.



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Pallor Preferred

BLANCHING vegetables is an ancient if not a dietetically honorable practice. For some perverse reason, people seem to prefer pallor: witness the care with which we bolt our flour even to the point of robbing it of its best food values; the efforts we put into breeding white poultry, farm animals and pets even though whiteness is a practical drawback rather than an advantage; the frequent reference of novelists to "aristocratic pallor"—which in actual life usually indicates either anemia or tuberculosis.

Why do we want white lettuce, white celery, white cauliflower, white onions? For crispness and delicacy of flavor, is the usual answer of the market-place.

Crispness of that sort usually means that the tissues of the stems and leaves we are buying are weakly built but crammed with sap until they are stiff. That is, a blanched vegetable is really a minimum of vegetable and a maximum of expensive water. It is the same state of affairs that we find in the pale shoots of potatoes sprouting in a dim cellar—the condition which plant physiologists consider more or less pathological and call "etiolated."

Delicacy of flavor really means, in

most cases, absence of all but a trace of flavor. This might be excusable in onions, but most of us, fed for years on salads made with "store" lettuce, have forgotten what the real flavor of lettuce is.

If it were merely a matter of cheating both our palates and our purses, we might pay the price of our folly, for we wouldn't be losing much that we really need. However, that isn't the whole story. Concealed behind the green chlorophyll that we so carefully get rid of is a yellow pigment, carotene, that is the parent substance of one of the most important vitamins.

Carotene gets its name from carrots, which have received a good deal of publicity lately because night-fighting aviators are encouraged to eat them freely, for deficiency of vitamin A would mean impairment of their vision in poor light. What's good for a flying fighter ought to be good for the rest of us, who are habitually not quite up to par anyway.

Science News Letter, May 2, 1942



SCIENCE CLUBS OF AMERICA

Sponsored by Science Service

NEWS OF CLUBS

PITTSBURGH, Pa.—The effectiveness of newspaper cooperation in staging a Science Fair is demonstrated in spectacular fashion in the Pittsburgh arena. The big event will take place from May 1 to May 16, inclusive. Sponsored by the Buhl Planetarium, the Pennsylvania Junior Academy of Science and the Pittsburgh Press, the Fair this year promises to eclipse any similar previous event.

"We must not falter in encouraging our youth to tinker and experiment. We must tell these young people that they are important, and that we are interested in what they are learning and doing," says Edward T. Leech, editor of the Pittsburgh Press.

"Now, more than ever before, we are aware of our great debt to our chemists and engineers and physicists and biologists. It is they who give the airplanes, the bombsights, the torpedoes, the sulfa drugs, the increased food supplies, and the machine guns with which we shall win this war," he continues.

"But I think we must not forget that these American scientists were, only a few years ago, boys and girls experimenting and tinkering in their home workshops and in their high school science laboratories."

Arthur L. Draper, Director of the Buhl Planetarium, has this to say: "We believe in the Junior Science Fair. We believe—and we think high school science teachers share the belief—that the Junior Science Fair at the Buhl Planetarium serves a vital function in science education in the Pittsburgh region."

NEW YORK, N. Y.—The Marconi Memorial Award Scholarships are announced again by the Veteran Wireless Operators Association. This is an annual, nationwide contest, open only to male members of Science Clubs of America.

There are two scholarships which are awarded annually; the first is a two-year, full-tuition scholarship in Radio and Electrical Communication at R.C.A. Institutes, either in New York, or Chicago, Ill.; the second, for the central United States zone only, is a one-year tuition scholarship in Aviation Radio at Midland Radio and Television School, Kansas City, Mo.

Announcements have already been sent to sponsors of all science groups affiliated with Science Clubs of America.

Award winners are decided by competitive examination and an evaluation of their school work.

The Committee on Awards is J. R. Poppele, representing Veteran Wireless Operators Association, Chairman of Scholarship Committee; Herbert S. Zim, Ph.D., representing The American Institute of the City of New York, and Joseph H. Kraus, Editor of Science Clubs of America.

JUNEAU, Alaska—Traveling Photo Shows stimulate interest in things photographic. These shows, consisting of about 45 prints, are made available to any group affiliated with Science Clubs of America. For several years, Traveling Photo Shows have been exhibited by the Irate Ions, a science club established in the high schools here. "Not only club members but the entire student body enthusiastically viewed the salon," writes Edna Harpole, sponsor of the Club. "Townpeople called during school hours and local newspapers as well as the high school publication gave the show some fine publicity. We plan to request another exhibit next year." And that's looking ahead.

ASHEBORO, N. C.—Primarily with the expectation of supplementing the school educational program in chemistry, the Central Carolina Crucible Club is continuing its activity under the new sponsor, science teacher Vertee Umstead. A greater interest in scientific topics is stimulated by a study of the lives of early scientists and by keeping abreast of modern developments in chemical fields; these are expected to add greatly to the knowledge of each member. The club looks forward to an exciting and pleasurable season.

LAS VEGAS, N. M.—Experimental and amateur radio activities within the prescribed limits of our state of war, are being undertaken by members of the Phy-Chy Science Club at Las Vegas High School. Some of the members are pursuing photography, taking camera flash shots, and handling all the darkroom work including the making of enlargements of worthwhile pictures. Charles W. Wolfe, chemistry and physics instructor, is sponsor.

Clubs are invited to become affiliated with SCA for a nominal \$2 for 20 members or less. You can become an associate of SCA for 25 cents. Address: Science Clubs of America, 1719 N St., N.W., Washington, D. C.

Science News Letter, May 2, 1942

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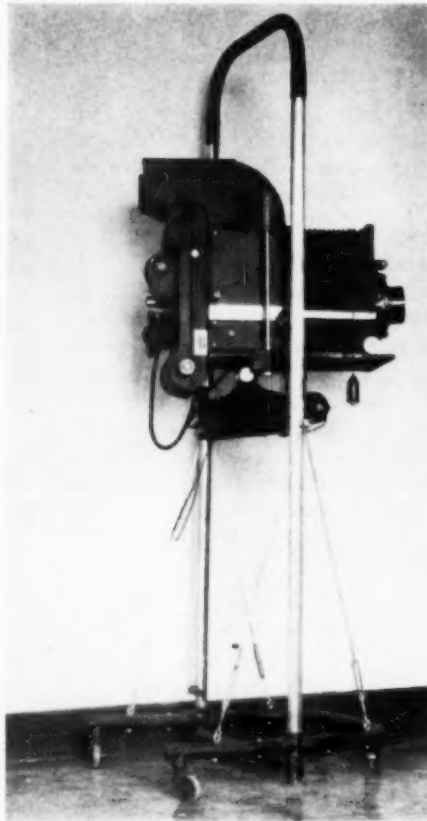
Novel Things for Better Living

Fluorescence, arc, and incandescence, the three modes of illumination used today, are all combined in a single three-in-one lamp recently patented. The yellow light of the filament and the blue of the mercury are complementary, the inventor explains, and combine to give a more desirable quality. Meanwhile, the mercury arc also gives off ultraviolet or black light. Why waste this? Of course not! So, the upper half of the bulb is coated on the inside with a fluorescent material, and to make still more sure that nothing is wasted it is coated on the outside with a reflecting material that turns back any rays that might be escaping skyward.

Dry shaving will no longer be accompanied with a shower of clippings that get all over your clothes and elsewhere if you make use of a recently patented clipper that catches and retains the hairs until you find it convenient to dump them. The device is in this case not an attachment, but a built-in feature that scarcely changes the size or appearance of the clipper. It consists of two little receptacles on either side that catch the hairs which pass out at the ends of the cutters. The covers of these receptacles open outward for dumping.

Don't count your carrots until you have provided yourself with a machine recently patented that will do the job for you. Not only will this machine count your carrots with unfailing accuracy, but it will separate them into groups of a predetermined number, ready to package and ship to the market.

A camera, fully electrical in operation, would seem to be about the last word in camera completeness. Such a camera is shown in the illustration. The shutter is operated by a bulb which



closes an electrical contact so that it can be used at any distance without loss of efficiency. After an exposure, the shutter is electrically reset and the film moved. Pictures can be taken in rapid succession and double exposures are impossible. Different sized pictures can be taken on the same roll without loss of film. Although a studio camera, it is light in weight and easily transported.

Freezing rivets instead of heating them to make them soft for driving seems odd. Yet that is precisely what is done with a special kind of aluminum rivet for airplane construction. These rivets during manufacture are heat-treated in a special way that makes them become soft when chilled. Then they are "quick frozen" by packing in dry ice, where they must be kept until driven. Once they warm up and become hard, they stay hard.

Accordion pleated tubes have now been invented to replace the scarce collapsible tin tubes. They can be made of any material which will take the accordion pleats, provided it is impervious to the paste within. The new kind of tube has one advantage over your old toothpaste tube; in whatever stage of collapse it may be, it can always stand upright on its circular base. This base projects inward, like the bottom of a bottle, so as to substantially fill the space in the tube when the latter is completely collapsed, thus preventing much waste of paste.

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 102.



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•First Glances at New Books

PHYSICS

THE ELECTRON MICROSCOPE—E. F. Burton and W. H. Kohl—*Reinhold*, 233 p., illus., \$3.85. Anyone who wishes to understand how an electron microscope works will find that he does not need even an elementary knowledge of optics or electricity if he reads this book, because it is all explained here in a delightfully simple and easy fashion. It would serve as an excellent textbook of those subjects.

Science News Letter, May 2, 1942

BACTERIOLOGY

INTIMATE BACTERIOLOGY, A Text and Laboratory Manual—Casper I. Nelson—*Burgess*, 166 leaves, illus., \$2.50. A combination of text and workbook for a first course in bacteriology, by a veteran researcher and teacher in the subject. Prof. Nelson's long service in an agricultural college insures that the practical, everyday phases of bacteriology receive ample attention. At the same time, however, medical bacteriology is by no means neglected; indeed, the laboratory outlines call for far more advanced experiments along this line than are commonly undertaken in undergraduate courses.

Science News Letter, May 2, 1942

ECONOMICS

REMAKING AMERICA—Jay Franklin—*Houghton Mifflin*, 287 p., \$3. One of the ablest of the advocates of the New Deal analyzes aims and efforts and appraises results, down to the nodal year-turn of 1941-42. As we pass from the purely civil phase to that of total national war effort, this perspective of our immediate background-decade becomes unexpectedly significant.

Science News Letter, May 2, 1942

ZOOLOGY

OFFICIAL ILLUSTRATED GUIDE BOOK TO THE PHILADELPHIA ZOOLOGICAL GARDEN—Roger Conant—*Zoological Society of Philadelphia*, 107 p., illus., 25c. Intended primarily for visitors to the Philadelphia Zoo, this pamphlet has interest for animal lovers everywhere because of its excellent illustrations and compact but informative text.

Science News Letter, May 2, 1942

ORNITHOLOGY

BRITISH BIRDS ON LAKE, RIVER AND STREAM—Phyllis Barclay-Smith—*Penguin*, 31 p., 16 colored pls., 50c. A few typical British birds, shown in very good color. Since several of the species are

identical with American birds, or have equivalent species in our avifauna, readers in this country will find it of interest.

Science News Letter, May 2, 1942

ZOOLOGY

MAN AND HIS CREATURES—H. C. Knapp-Fisher—*Dutton*, 236 p., illus., \$2. Animals that have been associated with man as companions, servants or hunters' quarry, described and pictured as they have appeared in literature and art from the dawn of history down to the present time. There is an astonishing wealth of historical information compacted into this moderate-sized book.

Science News Letter, May 2, 1942

BIOLOGY

BIOLOGY, A Revision of Biology for Beginners—Truman J. Moon and Paul B. Mann—*Holt*, 966 p., illus., \$2. New edition of a successful text for high schools.

Science News Letter, May 2, 1942

BOTANY

FIRST COURSE IN BOTANY—Raymond J. Pool and Arthur T. Evans—*Ginn*, 422 p., illus., \$1.68. Special attention is first given to function, through the physiological-ecological approach. With the student's interest thus captured, there follow sections on classification and form, and finally discussions of applied botany: forestry, plant breeding, plant diseases.

Science News Letter, May 2, 1942

CHEMISTRY

FLUORESCENT CHEMICALS AND THEIR APPLICATIONS—Jack De Ment—*Chemical Pub. Co.*, 240 p., illus., \$4.25. Three thousand fluorescent chemicals are here listed and described. Many of them are the author's own discoveries. Much older material has been corrected. But the chief aim of the book is the use of these chemicals in the industries, arts and sciences.

Science News Letter, May 2, 1942

MATHEMATICS

DIMENSION THEORY—Witold Hurewicz and Henry Wallman—*Princeton Univ. Press*, 165 p., \$3. Exactly what distinguishes a five-dimensional from a four-dimensional space according to the modern topological concept of dimension is told in this book. Inadequacies of the older theories are explained. Emphasis is laid on modern techniques of function spaces and mappings in spheres.

Science News Letter, May 2, 1942

NAVAL SCIENCE

FIGHTING SHIPS OF THE U. S. NAVY—Fletcher Pratt; illustrated by Jack Coggins—*Garden City Pub. Co.*, 26 p., illus., \$1. Spirited sketches in color of the principal types of naval vessels, not only actual fighting craft but auxiliaries of the "train", with supplementary thumbnail sketches in black-and-white at the bottom of each page, and brief but informative text.

Science News Letter, May 2, 1942

MATHEMATICS

ADVENTURING WITH MATHEMATICS—Ethel F. Huggard and C. Newton Stokes—*Winston*, 209 p., illus., 96c. A school arithmetic for grade 8A, written with the idea of inducing the child to believe that learning arithmetic is an exciting adventure.

Science News Letter, May 2, 1942

ENGINEERING

A SIMPLE GUIDE TO BLUEPRINT READING, A Text for Those Engaged in a Preliminary Study of Blueprint Reading—William N. Wright—*Craftsman Press*, Seattle, Wash., 336 p., illus., \$3. The purpose of this book is to help those who have to read blueprints and who are not necessarily draftsmen. It is not intended as a textbook for those who wish to become draftsmen. It is devoted mostly to the drafting methods of the Boeing Aircraft Company.

Science News Letter, May 2, 1942

ARCHAEOLOGY

AN ARCHAEOLOGICAL SURVEY OF PICKWICK BASIN IN THE ADJACENT PORTIONS OF THE STATES OF ALABAMA, MISSISSIPPI AND TENNESSEE—William S. Webb and David L. DeJarnette and others—*Govt. Print. Off.*, 536 p., 316 pl., \$2. See page 283.

Science News Letter, May 2, 1942

TECHNOLOGY

PLASTICS MOLD DESIGNING—Gordon B. Thayer—*American Industrial Pub.*, 64 p., illus., \$2.50, cloth; \$2., paper.

Science News Letter, May 2, 1942

GENERAL SCIENCE

BASIC ELEMENTARY SCIENCE—Sabra Miles Watkins—*Savoy Printing Co.*, 83 p., \$1.50. A compilation of lessons for teachers of science covering solar systems, earth, moon, tides, time, seasons and world weather.

Science News Letter, May 2, 1942